

POWER INDUSTRIAL DC SYSTEMS

by Mak Plus Power Systems



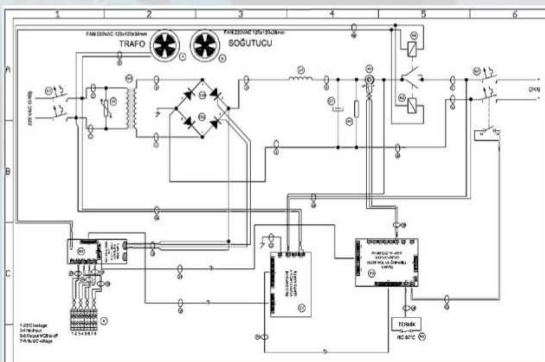
The rectifier is SCR controlled AC/DC rectifier with input isolation transformer and with automatic constant voltage and constant current ability. All operations are controlled and proceeded by micro controller. The load is protected against the failures of the DC charger since the load is fully isolated from the system.

Rectifier converts the alternate input voltage having variable amplitude and frequency according to the technical specification, into a constant-voltage and current-controlled direct output voltage. Its function is to control the output values via a three-phase, 6-pulse, fully controlled SCR Rectifier Bridge.

Wide range of use. It is used instead of shunt resistor so the output ripple is low and fully isolated. Input and output can be switched by circuit breakers individually. It has self-protection against to over temperature. The alarm contacts can be used for external system in case of any anomaly.

Ideal for transformer energy distribution centers, gas oil energy distribution centers, natural gas energy distribution centers, mining industry security and lightening, building automation systems and for special telecommunication applications.

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TECHNICAL FEATURES

INPUT	
Voltage	220/230/380/400 VAC
Voltage Tolerance	±15
Frequency	50Hz ±5%
Protection	Thermal-Magnetic Over Current Protection, Over Voltage Protection
Power factor	>0.8
OUTPUT	
Voltage	12/24/48/110/125/220 VDC
Nominal Charger Voltage	-20%/+30%
Boost Charger Voltage	Adjustable between 100% and 120% of the Nominal Charger Voltage
Static Tolerance	±1%
Current Adjustment	0-100%
Maximum current	110%
Dynamic Response	<5% of Output Voltage (at 50% Load, 25% Changing Load)
Output fuse protection	Short Circuit, Over Voltage, Reverse Voltage Protection
Output Ripple	< ±1% RMS AC of Output DC Voltage (at full load w/o Battery Group)
DISPLAY PANEL	
Measurements	Two 3 Digits 7-Segment Display for Output Current and Voltage
	Indicators Boost charging, Float Charging, Charger Failure, Over Load, Over temperature, Mains OK.
Buttons	Boost Voltage Setting, Float Voltage Setting, Output Current Setting, Boost Charging Time
GENERAL	
Boost Charging Timer	0-600 Minutes Adjustable by 1 minute Accuracy
Cooling	Thermic Controlled Fan
Isolation Voltage	2500 VAC Output/Chassis, Input/ Output
Efficiency At Full Load	>85%
Circuit Breakers	Double Pole Magnetic Circuit Breakers for Load, Battery Output, AC Input MBC
Operation Technique	Phase Angle Controlled Thyristors Module
Protection Level/Color	IP54/ RAL 7035
ENVIRONMENT	
Operating temperature	-10/+50
Relative humidity	5-90 %
Operating Attitude	Max. 3000 Mt
Noise Level	Max. 60 db
Electrical Standards	EN 50091-1 (Security)/EN 50091-2 EMC
OPTIONAL	
Silicon Dropper Circuit For Output Load	
Both Charger and Battery Group Inside the Same Cabinet	
12 Pulsed Rectifier	
LVD Deep Discharge Battery Protection	
*Available up to 24/48/110/220/1000 Ampere	



OTHER FEATURES



Standart Features

- Adjustable Timer for Boost Charging
- Adjustable Boost and Float Charge Voltages
- Automatic Boost Charge Selection according to boost / float current set value
- Adjustable Rectifier Output Current and Battery Charge Current
- LCD Display for DC Load / Battery Voltage , DC Load / Battery Current , Input AC Voltage / Line Current / Frequency
- Event History for all Electrical values and failures
- Automatic and Manual Battery Test
- Boost inhibit facility for interlock redundant application
- Output Filter Inductor and DC Longlife Capacitor
- Electronic Over/ Under Voltage, Over Current and Short Circuit Protections
- Isolated Output by Input Transformer and output hall effect current module
- Parallel Redundant Operation
- Boost and Float dropper control output for Ni-Cd and Lead Acid Battery
- Input Filter and input surge Voltage protection
- Internal Over Temperature protection
- Temperature Compensation for Battery
- Low Battery Indication and Alarm contacts
- Rectifier Failure Indication and Alarm contacts
- Rectifier Over Voltage Indication and Alarm con tacts
- Over Temperature Indication and Alarm contacts
- Line Failure Indication and Alarm contacts
- Input MCB Indication and Alarm contacts
- Load MCB Indication and Alarm contacts
- Battery MCB Indication and Alarm contacts
- Earth Fault Indication and Alarm contacts
- Reverse Battery Connection Protection
- Reset Button

Charger product consumes 1/3 phases 230/400 \pm % 20 VAC energy from the mains and converts it to 12-24-48-110-220 VDC energy. Feeds the loads and charges the batteries in same time. Feeds the loads from battery without interruption in case of mains disconnected. Charger composed by rectifier and battery group. Batteries may fit inside the charger cabinet or may install in external cabinet depend to battery capacity.

Input and output are protected with MBSs and all settings like boost charge, floating charge and battery charge current can be adjusted via front panel touch pad digitally. DC output is filtered by L/ C, so DC ripple at full load always lower than 1 % to increase battery life. All rectifiers have standards low battery and rectifier failure alarm.

The charger has a modular design to provide service and maintenance simplicity. The outputs of the Battery Chargers can be connected in parallel or in series based on the requirements.

Battery test function tests the total battery voltage according to the set program and gives information back to the user. When battery test starts the charging voltage is set to desired test voltage for a period of time and microprocessor analyze the information. The test intervals can be set from the front panel and user interface. This function allows the user to monitor the battery status and enhance battery life it with necessary actions.